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**Abstract of the Disclosure**

A method and an apparatus for producing oxygen and noble gases by cryogenic distillation. A first stream of cooled and purified air is sent to a medium pressure column where it is separated. A first nitrogen enriched stream is withdrawn from the medium pressure column, and part of this stream is sent to a low pressure column. An intermediate stream is withdrawn from an intermediate level of the medium pressure column. This intermediate stream is then sent to the low pressure column. A stream, which is enriched in oxygen relative to the intermediate stream, is withdrawn from the bottom of the medium pressure column and sent to an auxiliary column. The auxiliary column also receives a liquid stream of nitrogen which is used for reflux. A second nitrogen rich stream is withdrawn from the top of the low pressure column. A second oxygen rich liquid stream, which is suitable for use as a product, is withdrawn from the low pressure column. Finally, a final oxygen enriched stream which is also enriched with krypton and xenon, is withdrawn from the auxiliary column.